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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/960,224	10/29/97	NISHIDA S	046916

MM92/1205
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EXAMINER	
QI, Z	
ART UNIT	PAPER NUMBER
2871	6

DATE MAILED: 12/05/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.	Applicant(s)
08/960,224	NISHIDA et al
Examiner	**Group Art Unit**
MIKE QI	2871

☐ Responsive to communication(s) filed on _____

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) *1-15* is/are pending in the applicat

Of the above, claim(s) _____ is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1, 2, 4, and 6-15* is/are rejected.

☒ Claim(s) *3 and 5* is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been

☒ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *3,4,5*

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Claim Rejections - 35 U.S.C. § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the article "Principles and characteristics of Electro-Optical Behaviaour with In-plane Switching Mode" (Oh-e et al) in view of US 5,085,973 (Shimizu et al).

Claim 1, Oh-e et al discloses (in the paragraph "Principles of Proposed In-plane Switching Mode" and Fig. 1) a liquid crystal display comprising:

a first substrate and a second substrate opposed to each other;

when a predetermined voltage is appled, the predtermined electric filed will be generated on the second substrate;

a liquid crystal layer injected in a gap between the pair of substrates;

the electric field generated by the second substrate being substantially parellel to the liquid crystal layer to control the display.

Oh-e et al does not disclose expressly the first substrate on which a plrality of color layers having transmission wavelengths different from each other are provided in paralleel to each other, and the liquid crystal layer having a thickness which varies depending upon the transmission wavelengths of the color layers, but those limitations were well known. The discloure of Shimizu et al is an evidence.

Shimizu et al discloses in Fig.1 a liquid crystal panel comprising a first substrate 1 on which a plurality of color filters (red, green ans blue, corresponding to the different wavelengths) having transmission wavelengths different from each other are provided in parallel to each other, and the liquid crystal layer having a thickness which varies depending upon the transmission wavelwngths of the color filters, so as to improve the contrast.

Therefore, the thickness of the liquid crystal layer varies depending upon the different wavelengths of the color layers as claimed in claim 1would have been obvious.

Claim 2, as the explanation of Shimizu et al above, Shimizu et al discloses in Fig.1 the thickness of the liquid crystal layer increases in proportional to the wavelength of the corresponding color filter, i.e., the thickness of the liquid crystal layer increases in propotional to the wavelength from blue (460 nm) to red (650 nm), so as to improve the contrast.

Therefore, the limitation as claimed in claim 2 would have been obvious.

Claims 4 and 6, in order to provent elusion of impurities from the color layers, the first substrate has a protective layer was well known.

3. Claims 7-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,034,756 (Yuan et al).

Claim 7, all the limitations for an active matrix liquid crystal display panel were well known as the explanation of Oh-e et al above, except for the optical compensation layer.

However, Yuan et al discloses (col.4, line 33-col.6, line 36 and Fig. 8 and 9) a LCD 200 in which the compensating layer 220 is disposed between the one substrate 231 and a corresponding one of the polarizing plates 210, and the compensating layer 220 has negative birefingence (negative refractive index anisotropy), and the axis direction of the compensating layer 220 is parallel to at least one of the polarization axes of the two polarizing plates 210 and 250 as shown in the Fig.9, so as to compensate the liquid crystal layer, and the wide angle viewing performence is greatly improved.

Therefore, the limitations as claimed in claim 7 would have been obvious.

Claims 8-9 and 13, Yuan et al discloses (col.5, lines 29-40 and Fig. 9) the improved performence is a result of each the "layers" L1-L5 of the LC cell 230 being compensated by each of the "layers" L1'-L5' of the compensating layer 220, i.e., the lquid crystal molecules in the LC latyer are substantially uniform, and the refractive index anosotropy axis of the compensation layer extends substantially in parallel to the LC molecules directors, so as to achieve the wide view angle improved performence. In this aspect, $\Delta n \cdot d = \Delta n' \cdot d'$, where d is the thickness of the LC cell 230 and d' is the thickness of the compensating layer 220, i.e., the $\Delta n_{LC} \cdot d_{LC} = \Delta n_F \cdot d_F$, and that is the perfect compensation.

Therefore, the limitations as claimed in claims 8-9, and 13 would have been obvious.

Claim 10 and 14-15, if the perfect compansation achieved, as a result, the refractive index n_{LO} of the liquid crystal layer for the ordinary light would equal to the refractive index n_{FO} of the compensation layer.

Therefore, the limitation as claimed in claims 10 and 14-15 would have been obvious.

Claims 11-12, if the perfect compansation achieved, as a result, the projections of directors of liquid crystal molecules would be parallel to each other and the projection of the refractive index anisotropic axis of the compensation layer would be parallel to the directors of the plane of the liquid crystal layer, and the angles relationship would be $\theta_1 < \theta_F < \theta_2$, and the refractive index anisotropic axis of the compensation layer would be parallel to the director of one of the liquid crystal molecules, and the angle θ_F would vary in the thicknesswise direction of the compensation layer in corresponding to the director in thicknesswise direction of the liquid crystal layer.

Therefore, the limitation as claimed in claims 11-12 would have been obvious.

Allowable Subject Matter

4. Claims 3 and 5 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art of record neither teaches nor discloses a liquid crystal display panel comprises various elements, more specifically, as the following:

the distances between the pixel electrodes and the opposing electrodes are differenet for the individual color layers [claim 3 and 5].

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (703)308-6213 .

Mike Qi
November 30, 2000

Kenneth Parker
Primary Examiner
Technology Center 2800